

CLAIMS

1. A method for making a methacrylate unit-containing polymer with a polydispersity <1.7 and containing at least one cross-linkable functional group comprising a step of radically polymerizing a mixture of ethylenically unsaturated monomers comprising at least 50 mole% of methacrylate monomers to a polymer in the presence of a) a radical precursor and b) I_2 or a sulfonyl iodide.
2. The method according to claim 1 wherein the sulfonyl iodide is an aromatic sulfonyl iodide, preferably p-toluenesulfonyl iodide.
3. The method according to claim 1 or 2 wherein the temperature during the polymerization step is lower than 130°C , preferably lower than 110°C , even more preferably lower than 90°C , and most preferably lower than 70°C .
4. The method according to any one of claims 1-3 wherein the mole ratio sulfonyl iodide : radical precursor is $>0.1n$, or wherein the mole ratio I_2 : radical precursor is between $0.05n$ and $0.5n$, wherein n stands for the number of radicals effectively generated per molecule of radical precursor.
5. The method according to any one of claims 1-4 wherein the polymerization is performed in the presence of an epoxide-containing compound.
6. The method according to claim 5 wherein the mole ratio epoxide : iodine atom is at least 0.01.

7. The method according to claim 6 wherein the mole ratio epoxide : iodine atom is at least 0.05.
- 5 8. The method according to any one of claims 1-7 for making a block or gradient copolymer.
- 10 9. The method according to any one of claims 1-8 wherein the polymer is further reacted with the iodine atom being removed, preferably by nucleophilic reaction, by heating and/or by reaction with a radical generating compound, optionally under reducing conditions.
- 15 10. Use of the polymer obtained according to any one of claims 1-9 in a cross-linkable composition for making a polymeric network, preferably a film-forming composition, more preferably a coating composition, adhesive or ink formulation, most preferably an automotive OEM or repair coating or an industrial coating composition.
- 20 11. Use of the polymer obtained according to any one of claims 1-9 in a further polymerization process.